





already alluded to, that a mine before it was abandoned was generally brought into a bad shape for future miners, mostly on account of its growing poverty, and the anxiety to get out all they could, without caring for another generation. The lecturer then at some length described, by means of drawings, the tumuli, as they were sometimes thought to be, and helped of the coal miners in the south-eastern parts of Europe. It was always important to carefully examine the old rubbish heaps, as indications would be sure to be found whether the workings had been abandoned on account of the poverty of the material, or through an overpowering pressure of water, and other difficulties which the mechanical knowledge of that day did not furnish the means of surmounting.

## Government Inspection of Coal Mines.

### THE INSPECTORS' REPORTS.

In connection with the SOUTH WESTERN DISTRICT, the more remarkable accidents which occurred during the year are first referred to and Mr. L. BROUGH then gives, as usual, some highly valuable general observations upon the nature of each separate class of accidents, and the means of dealing with them. Whether a full amount of air requisite to secure adequate ventilation is brought about, he remarks, by the use of furnaces or by the employment of machinery, the power in either case must still be so contrived as to yield the supply, even in excess, in order to compensate for leakage and for great contingencies. It is of no avail to invest the subject with mystery, or to obscure its simplicity by a cloud of abstruse calculations. There is nothing occult in ventilation; it simply involves the power, whatever that may cost, of producing a superabundance of fresh air, and, afterwards, the practical knowledge of its proper distribution underground. It is to the faces of work we require to introduce as much as need be, and of course a sufficient number of men must be employed to carry it to every part of the mine. But too many trickling currents of air would be sure to defeat the object in view. Again, to protect life, the whole work should be laid out in districts and panelled, if such method can possibly be effected, so that should an explosion take place in one part of the pit, the people in all the other portions of it may have left to them some chance of escape from death. In this kingdom it has been often stated that in mines liable to sudden outbursts of gas no lamp can be so thoroughly relied on as the "Stephenson's;" if this be so, its use should be insisted on. It may be added, that the very condition that requires the agency of an apparatus of this kind demands also, that blasting with gunpowder should be entirely done away with. A never-ceasing and abundant current of fresh air from the surface being, then, understood to be the *sine qua non*, and that again fairly conducted into all the working places, it follows that the shortest road should be provided for its easy exit after having become vitiated by the duty it has performed in its tortuous route through every department of the mine. Ample diameter in shafts and great sectional area in every underground road and windway are positive requirements; neither air nor water can be forced through throttled and restricted passages without enormously increased motive power.

Too much coal should not be extracted by means of a pair of pits, or any other given number of openings, and no split or current of air should be unreasonably lengthened out. Finally, if safety cannot be arrived at by such "given number of openings," then it is but just to say that more shafts must be thought of; he sees no other conclusion that can by any possibility be arrived at. The eager getting of inordinate quantities with limited preparations may be classed amongst the many crude conditions that bring about calamity; indeed, next to feeble and neglected ventilation, a hungry desire to get out coal at every risk and hazard may be regarded as one of the leading causes of danger and destruction. The barometer has done great service to the coal miner, and its use should be industriously furthered and encouraged. The pressure of the atmosphere per square inch is sufficiently well known, therefore to calculate that pressure right out to the foot, and to take into consideration the enormous number of square feet of fresh coal faces exposed in a large colliery, will be to see and understand what frightful calamity may follow on any great depression of the mercury. When the atmosphere is dense and heavy, the gas is kept back in a certain state of tension; but reduction of column due to the two inches which was observed in 1866 would withdraw so much repressive action from those very faces as would, in a very short time, and in the absence of sharp ventilation, bring about the fouling of a whole pit; the difference of an inch only might do that. Indeed, in very fiery seams the removal of pressure indicated by the fall of only half an inch will sometimes partly account for a district of work filling up with explosive mixture; therefore, it is to be repeated, that the sinking of full two inches in the barometer would likely enough be sufficient to overpower every common provision "under ordinary circumstances," as the law now stands; and then the presence of a naked light, the clumsy handling of a safety-lamp, the approach of a damaged one, would scatter death and destruction through every part of the colliery. Under these conditions something more should be done than a mere preparation for "ordinary circumstances." Fire-damp previously pent up or kept back by that dense state of the air which a high column of mercury most truly represents, may well expand itself and rush out from coal faces and goaves the moment the containing power undergoes diminution. This should teach us that augmented ventilation and increased vigilance are indispensable. Old "hollows," or spaces exhausted of coal, are sometimes found in localities that may well cause very serious apprehension on the part of the workpeople; in such case any indication of difference in the weight of the atmosphere will not only tell of danger from the fresh coal faces, but will give a general idea and a fair warning that something also may be going on in the goaves.

Falls of coal and stone leave "explosion" far behind in the death records of the Inspector. For years past he has made particular mention of these, the heaviest of all our mining calamities. For the most part, in his district, the colliers put up their own pit wood, and are themselves mainly responsible for their own personal safety. In the North, the deputies perform analogous duties, and, no doubt, it is better far that some of the sub-officers of the pit should be answerable for the secure and proper setting up of timber. But, whichever method may henceforth be determined on, it is still certain that even something more than that is wanting, therefore the subject of falls of coal and stone should be reopened and should undergo entire and deliberate reconsideration, the annual loss of life is too grave and serious to permit us to go on as we now are; some endeavour must be made to apply a remedy, or at all events to ameliorate the present condition of this class of death. In the North, the Inspector has suggested that a certain number of props should invariably be used, even in the absence of alarming appearances in the working places, on account of the treacherous nature of that structural division which more or less pervades all coal strata, and the which is locally known as "backs." In some districts, and as "slips" in others; these are often concealed, and only make themselves manifest when the heavy fall has really taken place. He makes mention of this conventional or stipulated mode of timbering, because as yet, as far as he knows, no other method has been proposed. Under any circumstances, an alteration as regards "falls of coal and stone" is a requirement of the present time, and the sooner something is effected the better.

The general adoption of the "long wall system" may be made to conduce to safety as regards "falls," although in very extended faces coal is apt to "rate," or fly off, by this method; still, that may be obviated by the manner in which the "gob" is made up at the right time, and in its suitable and proper distance from the face of work. "Long wall," again, affords facilities for the extraction of all that a seam of coal or a group of ironstone courses contain; therefore, not only as far as safety is concerned, but also as regards the interests of the lord of the soil, it surpasses all operations by pillar and stall. Every ton of product should, in fact, be excavated; our most valuable steam and smelting fuel is met with in the lower series, and the deeper we go the more sure and certain will be the difficulties and dangers to be encountered. He is of opinion that every reason exists for not sacrificing even the smallest portion of our underground supply—great as it may appear in the eyes of the present generation; every pound weight of coal and ironstone should be brought to the surface and made available for some useful purpose or other. The extraordinary waste of coal, even after it is gotten by severe and expensive labour, has been so often pointed out, that it is not necessary to reproduce any mention of it here; its clumsy treatment in manufacturing processes, in generation of steam, and in domestic consumption, is beyond any description that he can possibly enter into.

It must not be said that there can be perfect immunity from danger from shaft accidents; to send people perpendicularly down hundreds of yards—even hundreds of fathoms—and to bring them up again requires very many conditions of perfection; firstly, in the shafts themselves, then in the engine, also in the strength and accuracy of the winding machinery and ropes, and in unwearied discipline, care, and attention. Nevertheless, more may be done in aid of safety to life and limb, and these measures may be very briefly enumerated. Ample steam power, so that great diameter in the drums can be permitted, in order that fair play may be afforded to the very strongest of ropes, high pit framing and large pulleys, good strongly covered cages, accurate guides, with lifting wickets at the pit top, a code of signals that cannot be misunderstood, and shafts of large diameter, solidly walled from top to bottom—whether passing through the strongest rock, or the most tender and rotten shale. With respect to safety apparatus in case of breakage of rope, he sees no objection to its use if it be but simple in principle, and entirely without complication in its construction; however, he must say, that he himself places great reliance on the means enumerated, that is, to say—powerful steam-engines, great diameters, strong tackle, and thickly walled shafts—plenty of boiler room of course, large safety-valves, true steam and water gauges, reliable load indicators, and very powerful and simply constructed breaks. He need not say that enginesmen should be well instructed, and selected on account of full practical knowledge of their calling and their sobriety, and also that they be fairly remunerated;—the very same remarks may be properly applied to all bankmen and setters.

Miscellaneous accidents underground arise from various causes: general crush of tube and trams, heedlessly walking up or down engine banks, self-acting inclines, and other sorts of slopes, and thus exposing themselves to be run over before they can reach the places of refuge, and so they get killed, or maimed for life; riding in and on trams against the rules, breaking of ropes and chains on inclines, inundations of water; explosion of gunpowder by carelessly leaving it exposed; the premature, or delayed, discharge of shots—either caused by far too common in blasting; with also some accidents incidental to underground employment, which really cannot very well be classified. If horse-roads were maintained in good ample size—that is to say, the top blown down when necessary, and the bottom properly cut when required, and in every case always well timbered—there would not be so many hauliers killed or injured. There should also be some restriction in respect of their riding in front or at the back of the trams. The peculiarity of the across heading system involves the necessity of wheel spazzing, in doing which the hauliers frequently get hurt, and even killed; also, in sharp gradients, they place their backs against the front tram of the set to retard its too rapid descent—a very dangerous procedure indeed. Now, if the hauliers worked in ladders or shafts, they could, with their superior strength, do far more than a strapping of a haulier could; and he must say, that he himself has seen many a haulier who had no other means of pointing it all out that he need not now enter into further details. More "double printings" also would greatly aid in simplifying the "lead" from the far in workings to the pit bottom, and the coal should not be loaded too high; in this respect, amongst other advantages to be derived, the main roads and cross headings would afford a much freer passage for the air, it being evident that these immensely large trams piled up with coal, must terribly interfere with sound ventilation, and, in fact, trap the air, and make it impossible to go with the hauliers. These boys should be left to look after their doors (neglect of which may bring

about explosion), and not travel with the trams to assist others. It is really tampering with the proper division of the labour of the pit, and, moreover, subjecting the boys to great and unnecessary danger.

In a set of drill tools for blasting purposes there are one or two (needle or prickler for example) that should be made of copper instead of steel, as, in truth, he had never ceased to point out. It is frightful the number of deaths, the loss of sight, and the blowing away of limbs, that take place in consequence of premature explosion of shots, or by delay in the due time of their discharge. Proper tools and efficient fuses would go a long way to prevent these occurrences. Inundations of water underground are fortunately rare, but they are dreadful when they do happen. Good maps, and never-ceasing use of the bore rods, would in a great measure correct this source of destruction of life.

Notwithstanding the eighth general rule about "places of refuge," travelling on slopes may still be classed as somewhat unsafe, on account of the singular indifference to danger of the workmen themselves. As to breaking of ropes and chains on inclines, they should often be examined, and never remain too long in use; the general wear and tear, the rubbing and friction on the floor, and the rattling and hammering over rollers, expose all wire-rope and link-chain to deterioration. The molecular structure of the metal is speedily altered by all such percussive action, the iron from the state of fibre becomes crystalline, and its integrity is entirely destroyed; then the ropes or chains suddenly snap, and people are killed or seriously injured, and property is pretty nearly always sacrificed. Above-ground accidents are for the most part brought about by entanglement in machinery during the process of oiling, contact with trams at or near the pit top, hauliers getting knocked down by the horse or otherwise overpowered whilst tipping rubbish on the spoil banks, smash of machinery, and the bursting of boilers. As regards the latter, he has never but once in the whole of this division of mines had a life lost from such cause, and that was the case of a poor friendless boy who was allowed to sleep at night on the shoulder of the brick-work of a boiler seating at a pit in Somersetshire. On the surface where there is plenty of extension and space, no roofs to fall, no fire-damp, and where light abounds, he really thinks that "above-ground accidents" should cease altogether, or at any rate become exceedingly rare. He observes that those Acts of Parliament which have already been passed greatly ameliorate the conditions of safety and healthfulness to the coal miner; but the recurrence at no remote periods of time of astounding catastrophes brings him more and more to the opinion that additional measures of legislation will be of still further value and use, and that an increase and extension of inspection will be the best means of keeping within bounds those calamities that cannot have other than most startling and painful effect upon the whole and entire nation.

### MR. H. H. VIVIAN, M.P., ON COLLIERY WORKING.

#### THE FERNDALE COLLIERY EXPLOSION.

In compliance with a requisition presented to his Worship the Mayor, a public meeting of the inhabitants of the borough of Swansea was held in the Nisi Prius Court of the Guildhall on Monday, for the purpose of expressing sympathy with the widows and orphans caused by the recent explosion in the Ferndale Colliery, Rhondda Valley, and to adopt some means to alleviate their present distress. The chair was taken by the Mayor (Mr. G. B. Brock), and among those present were—Mr. H. H. Vivian, M.P.; Messrs. H. J. Bath, C. Bath, S. B. Power, J. W. James, Alfred Sterry, George B. Strick, J. Glasbrook, T. W. Richmond, Edward Strick, J. B. Bellingham, John D. Thomas (High Bailiff of the County Court), D. W. Thomas, R. A. Essery (Town Clerk), — Bancroft, T. Cory, — Yeo, and other gentlemen connected with the iron and coal trades of the district.

The Mayor, in opening the proceedings, said they were all aware of the object of for which they had assembled that day. He might just say that a requisition had been presented to him requesting him to convene that meeting, and he had embraced the earliest day he could to enable his fellow-townsmen and others who were charitably disposed to come together and express their sympathy for and to contribute towards a fund to aid the necessities of the widows and orphans of that dreadful calamity at the Ferndale Colliery, which they all so much deplored. He had hoped to have seen a larger number present, but the reason why the attendance was so small was in consequence of the exceedingly unpropitious weather. It was, he believed, impossible for anyone to refuse his deepest sympathy for the sufferers by such a dire calamity. They must have hearts of stone, instead of hearts of flesh, did they do so. Persons at a much greater distance from the scene of the calamity, but who had read of it through the many newspapers, had been appalled at the magnitude of the sacrifice of human life, and the consequent misery and distress it must entail. It was a sad visitation when death stalked through the land by means of various diseases—when cholera, for instance, brought down its victims hourly—but that was not such a awful visitation as that which they had now to deplore, when scores and scores of human beings were suddenly hurled into eternity. And in this instance it was not the old and infirm who had been taken away, but strong, able-bodied men, in the prime and vigour of life; and when they considered these things they could not help giving vent to their deepest and most heartfelt sympathy. If they looked at this sad event by itself, without any of the scenes of distress which surrounded it—even then it was a dreadful calamity; but when they considered how many were dependent upon the labours of these poor men—when they knew so many widows and orphans had lost their bread-winners, and were left utterly destitute, then the consequences of the calamity were more dreadful than even the accident itself. In the accident itself the poor fellows reposed quietly in death; but there were now the lamentations and cries from the widows and orphans, which ought to be listened to by one and all. Let them remember for their example that those lamentations and cries had reached even the throne itself, for the Queen, with her noble, generous heart, and her womanly feeling, had sent a munificent contribution to the funds, besides writing a letter expressive of her deep sympathy with the sufferers. The Prince of Wales had also followed the example of his illustrious mother, and surely her people of this town and district could not but respond liberally to the appeal which was now made to them. Those who were the sufferers by this dread calamity were neighbours, and he hoped the inhabitants of Swansea would, therefore, have a neighbourly and friendly feeling, and that the appeal would not be in vain. Although they were but few in number, he hoped they would form a nucleus for a good fund. He had received a letter from Mr. Grenfell, regretting his inability to be present, but requesting that his name should be put down for 20*l.*; also a letter from Mr. John Jones, who stated that he was obliged to go from home, but requesting that his name might be entered for a donation of 10*l.* He (the Mayor) would now call upon their country member to move the first resolution.

Mr. H. H. VIVIAN, M.P., said the resolution which had been entrusted to him was—"That this meeting is desirous of expressing its deep sympathy with the unfortunate sufferers by the late Ferndale Colliery Explosion—and deems it expedient that measures should be taken to raise a fund for the relief of the widows and orphans rendered destitute by that event." The Mayor had so feelingly and completely expressed the sentiments which had induced gentlemen to attend the meeting, and also to sign the requisition—sentiments which must at the present moment animate the breasts of all present—that it was hardly necessary to repeat again the sentiments to which the Mayor had given such able utterance. It was one of those dreadful calamities which from time to time occurred in this and other mining districts, but this was the greatest and most serious in its consequences of any which had happened in the South Wales district. It was now estimated that 70 poor widows had been left without husbands, those to whom they looked for support and to provide their daily bread, and 140 children left fatherless. Those numbers represented a large sum of money, for they knew that large sums were required to provide not only for their present necessities, but to assist the widows either until they re-married, or the whole of their future lives, and the children until they arrived at such an age as to be able to obtain their own livelihood. It was difficult to forecast what sum would be required for those purposes. Fortunately, they had but slight experience in that district of any calamity at all approaching that which had just happened, but from the experience they had had, it would not be too much to say that a sum of at least 10,000*l.* would be required to meet the charges consequent upon the calamity. Some gentlemen had gone into the question very carefully, and considered a very much larger sum would be necessary, but so far as he (Mr. Vivian) could estimate from figures which appertained to the Klea fund some seven years since, and from the figures with which he was intimately acquainted as regarded the Morfa Colliery, he believed that about 10,000*l.* would be required to meet the necessities of this calamity. As he had before remarked, however, it was impossible accurately to forecast what sum would be required, as the charges extended over a large number of years. It would be impossible to suppose that any single firm could meet the double charges of such a calamity as this. Messrs. Davis and Sons, the proprietors of the pit, will have of necessity to bear a very serious loss and burden in the damage which must have occurred to their property by the explosion, and the consequent interruption to the working of the colliery. It must be some two or three years (he spoke from his own sad experience in such matters) before the colliery could be in the same efficient state as before the accident. Although in calamities of less magnitude it was possible, especially where the working of the colliery was merely subsidiary to other undertakings, for the firm to undertake the entire charges consequent upon such explosions. Still, where a firm was entirely engaged in any one particular class of business, it would be almost impossible to suppose that such a firm could meet the charges consequent upon such a calamity as that they now referred to. The Messrs. Davis, the owners of the colliery, had put down their names for a very handsome sum, and he was sure by the public prints that they had stated that should any deficiency exist, they would make up such a sum as would be necessary to supply the exigencies of these poor people. He (Mr. Vivian) had very recently spoken in reference to this matter, and his remarks had been very fully and accurately reported in the local newspapers, for he had seen a very accurate report of the meeting at Pontypridd in the *Cambrian* newspaper, so that he need not again enter into the question arising from this calamity. He had read, and watched with much interest, the letters and leading articles which had been written consequent upon this accident. It appeared to him that much good was likely to arise

from the way in which men's minds were now being drawn to the question of saving and economising human life in the working of collieries.

Mr. VIVIAN then said that he wished now more especially to allude to the letter of Mr. John Nixon—[see *Mining Journal* of Nov. 23.] It was seldom that a gentleman in Mr. Nixon's position, as a large and extensive colliery proprietor, and one intimately acquainted with the practical working of mines, came forward in public and expressed his opinions so freely, so candidly, and so ably as he had done in the letter which he had sent to the various newspapers. The community generally were deeply indebted to Mr. Nixon for his very able and candid expression of opinion. Before he had read that letter of Mr. Nixon he (Mr. Vivian) was not acquainted with the "double-shift" system; but, having perused that letter carefully, it did seem to him that it would be exceedingly desirable that that system should be introduced into the South Wales districts. Knowing, as Mr. Nixon undoubtedly did, and as he (Mr. Vivian) did, how little as a rule remained to be done by colliery proprietors to secure, so far as human means could devise, the safe working of the collieries, Mr. Nixon had directed his mind to see how it was possible to prevent such a serious loss of human life by explosions. With that end in view he had suggested the double-shift system. That was no theoretical opinion simply—it had already been adopted in some of the largest collieries in the North of England, and Mr. Nixon had in his letter shown conclusively that it was far better for the men, as well as for the masters, irrespective altogether of the fact that in case of accident it limited the loss of life to one-half of that which now usually took place. It was, of course, quite clear that if the double-shift system were adopted, and if only one-half of the cutters were underground at a time, only one-half of the men employed at the colliery could be killed in case of explosion—at any rate, should an accident unfortunately occur, they would have to deplore a much less sacrifice of life if the double-shift system were enforced than under the plan at present in use in this district. There were, no doubt, drawbacks and inconveniences in the double-shift system as advocated by Mr. Nixon, and he (Mr. Vivian) had received reports from some very able coal viewers and mining engineers in both North and South Wales, who were as intimately acquainted with the subject as Mr. Nixon himself, and who had pointed out several very strong objections to Mr. Nixon's plan; but if his enforced adoption should be considered necessary to the saving of human life, then it would be most desirable so to do. If at that moment, instead of having to lament the loss of 170 lives, they had only to deplore the loss of 80, it was clear that the gain would be very considerable. Then, combined with the system which Mr. Nixon advocated, there was the suggestion which he (Mr. Vivian) had made at the former meeting—the panel system—a system first introduced into the North of England by the late Mr. Buddle, whereby the loss of life would be still further reduced, and the number of men sacrificed by such explosions greatly diminished. But, after all their precautions, a great deal naturally depended upon the miners themselves whilst underground, and at the last meeting, to which he had already referred, he made some remarks with the view of creating a strong feeling upon this matter in the minds of the colliers themselves. After leaving the meeting he happened to fall in with the two Government Inspectors of the district (Mr. Brough and Mr. Wales), and he travelled with those gentlemen from Pontypridd to Swansea. Their conversation naturally turned upon colliery explosions, and Mr. Wales incidentally remarked upon the comparative immunity enjoyed in the North of England, in the counties of Durham and Cumberland, from such dreadful explosions, and the reason he gave for this was the very great care and vigilance of the persons engaged in the collieries themselves. Mr. Wales observed that in the North of England, if a collier was thought to be guilty of doing anything likely to endanger his own life and that of his fellow-workmen he would be watched closely, and if detected committing such a crime (for he could call opening his safety-lamp or smoking in the pit nothing less than a crime) he would be instantly reported and punished. He had not informed Mr. Wales that such had been the subject of his remarks at the meeting, and, as the remarks of Mr. Wales were, therefore, spontaneous, he (Mr. Vivian) was particularly struck with them. If, therefore, they could create a feeling of the great crime which the opening of a lamp, or smoking in the pit, in the minds of the colliers themselves, they would have gone a very great way to prevent calamities of such a dreadful nature as they now had to deplore. There was nothing more noble than a disregard of danger and death when it sprang from a right and proper motive. If such a feeling had not been implanted by Providence in men's hearts none would be willing to enter upon some of the necessary and ordinary avocations of life. If men were not willing to face danger they would not find sailors and soldiers, engine-drivers, and men who work steam-boilers, and many, if not most, of the dangerous avocations of life would be difficult to be carried on. But there was a wide difference between a noble disregard of danger and foolhardiness; and it was against foolhardiness in the pit that he now raised his voice, and which recognised the fact that the man who so acted would render explosion not only possible but probable. And this now brought him to say a few words in reference to safety-lamps. A great deal had been said and written about these lamps, and some upon some of the necessary and ordinary avocations of life. But, in fact, they were worse than useless, in making the collier more regardless of the presence of gas. But, such remarks were only made, in his opinion, by persons who did not know the proper use of safety-lamps. They were all aware that the Mines Inspection Act provided that every working stall in the colliery should be kept free from gas, and that if they allowed explosive gas to accumulate they were liable to very serious consequences. But, adopt what means they would, there would be accumulations of gas in the pit, and but for safety-lamps they would have explosions almost daily. In every fiery mine something or the other was constantly occurring which rendered the gas explosive. Every now and then a "blower," or a reservoir of pent-up gas, was struck into, and from which the explosive gas issued in great abundance; and when the usual or ordinary ventilation of the mine was not sufficient to dilute and render harmless such gas, then, unless safety-lamps were used, an explosion must occur. Again, a sudden alteration of barometer would seriously affect the condition of the mine, because they all knew that the gases which were constantly exuding from the mine were only kept in check by the atmospheric pressure counteracting, and if, therefore, that atmospheric pressure was removed, explosion of the gases became far more liable. An air-door being suddenly thrown open, and allowed to remain so for any time, may also cause an explosion. Accidental circumstances of these kinds were constantly occurring, and would constantly occur, notwithstanding every precaution, and if the colliers were allowed to carry naked lights with them explosions would be inevitable; but safety-lamps being carried allowed the men time to retire from the spot, and thus avoid accident. There was another matter which had occupied the attention of the writers of the letters and articles which had appeared in the press, and the suggestion was a very good one—that some general fund, or some insurance society, should be formed, partly derived from a small tax upon coal, and partly from the wages of the colliers, to provide means of meeting calamities of this kind in future. He had every reason to believe that something of the kind would be carried out. Some such plan was most desirable and necessary, not only to meet the exigencies of such frightful explosions as that which had lately occurred, when hundreds of lives were hurled into eternity, but also to meet the necessities and to alleviate the misery which was daily occurring from accidents in mines, and from which more poor fellows lost their lives than from such serious explosions as from fire-damp. It was quite clear, therefore, that a general fund of this character ought to be provided, but whether it should be done privately, or by some statutory enactment (possibly by amending the Mines Inspection Act, which must take place), he could not tell, but some provision ought to be made to provide for the necessities of those rendered destitute by accidents in mines. It now only remained for him to express the hope that Swansea would contribute liberally towards the fund which was being raised for the sufferers by the Ferndale Colliery explosion. They had a noble example set them in the munificent contribution of her Majesty, who did not allow a single post to pass after the frightful calamity occurred, and after it was proposed to raise a fund for the relief of the widows and orphans, in sending down a handsome contribution, and also commanding a letter to be written expressing her deep sympathy with the sufferers. *Bisdat qui cito dat*—"he who gives quickly gives double"—was a well-known and appropriate adage, and her Majesty, with that fine, noble, generous, and womanly feeling which had always characterised her, promptly and liberally came forward upon this occasion. That was a noble example, which he hoped all would endeavour to follow. All who were present were deeply interested, either directly or indirectly, in the coal trade. There was not a single individual who did not, either directly or indirectly, owe all the property and comfort with which he was surrounded to coal; and when a dreadful calamity of this kind befel those who were engaged in the dangerous occupation of working and cutting that coal, it behoved them one and all to come forward and support those rendered destitute by Providence having cut off from them their only support. Mr. Vivian concluded by moving this resolution.

Mr. J. W. JAMES, in seconding the resolution, said that little was left for him to say, for the very exhaustive speech of Mr. Vivian had taken the argument out of his mouth, even could he (Mr. James) express himself so ably as Mr. Vivian had done. He wished, however, to make one or two observations in reference to one or two points alluded to by Mr. Vivian, and one was the remark which some persons had made, to the effect that the colliery proprietors ought to meet the expenses of such calamities themselves, without coming to the public at all. The remarks which Mr. Vivian had made upon that point came with all the greater weight from him when they remembered the generous manner in which he and his firm came forward for the support of the widows and orphans caused by the explosion in their Morfa Pit, some four years since. It was evident, however, that such expenses could not be borne by the proprietors of the pit in the present state of the coal trade, and he (Mr. James) could not but be of the opinion that the proprietors made large fortunes, and ought, therefore, to bear the expenses conse-



During the present month (November) we have resumed the drivage of a cross-



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